The Fortnightly

REVIEW

OF THE CHICAGO DENTAL SOCIETY

March 1, 1942

Volume 3 • Number 5


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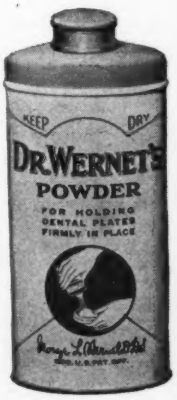

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ADAPTS THE **PATIENT** TO THE DENTURE

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March 1, 1942

Volume 3

ROBERT G. KESEL — **EDITOR**

J. J. HOLLISTER — **BUSINESS MANAGER**

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The Fortnightly
REVIEW

March 1, 1942 *Volume 3 • Number 5*

Highlights of the 78th Annual Midwinter Meeting

"The possessions of mankind which precede all others in value are the philosophy expressed by the ancient Greeks, the moral law laid down by the Jews and the teachings and thoughts of Jesus," said Dr. Clark G. Kuebler, who on Monday evening addressed the General Session of the 78th Annual Midwinter Meeting. "If we keep in mind these three principles, civilization cannot perish." He said further in his address entitled "Antidotes to Frustration" that the citizens of the world's democracies stand today in a "profound and awful crisis" pointing out that the present world is in a fundamental clash of cultures. Dr. Kuebler quoted from Spengler and Ortega, the two men best known in the modern world as exponents in the belief that civilization is rapidly approaching complete destruction. "Dark as the picture is, I believe we will survive if we do our most searching thinking now," said Dr. Kuebler.

KUEBLER

Other highlights in Dr. Kuebler's speech were: "(1) Freedom never comes through 'happenstance' but instead through conscious, assiduous, self-abnegating effort. (2) Citizens of the democracies have definite moral responsibilities imposed upon them by virtue of their citizenship. In place of personal aggrandizement and ruthless individualism must come the highest type of social consciousness, namely one that does not stifle the individual. (3) World believers in democracy must go back to the basic idealism and philosophies laid down as the most valuable possessions of mankind." Further he said that if democracies are to survive they must be firm believers in the righteousness of their own convictions, whether good or bad, to succeed as well in the rebuilding of the civilization which the totalitarians are striving so futilely, we hope, to tear down. These ideals and principles must be taught by home training during childhood rather than gathered from newspapers and magazine articles. The fact that the power of the press may exercise a destructive as well as a constructive influence upon the young mind, was Dr. Kuebler's reason for this statement.

WELLS

According to Commander C. Raymond Wells, Chief Dental Officer of the Selective Service System, who addressed the Chicago Dental Society at its session on Monday night, the majority of the men rejected because of dental defects—the largest single cause of rejection—was missing teeth. This, he said, was the result of physicians and dentists following the practice of extracting infected teeth rather than striving to save the teeth and treat the infection. A

nationwide program has been launched to make men, rejected for dental ailments and minor physical defects, fit for service at the expense of the government. Selective Service has recommended that more women enter the dental profession and become dental technicians to release more men for service with the armed forces.

Making one of the first public announcements regarding the rehabilitation program, Commander Wells said, "Authorization of a rehabilitation program in Virginia and Maryland this month marks the beginning of a long planned nationwide campaign and when results of these pilot tests are evaluated, a date for inauguration of the national program will be announced.

"The registrant formerly rejected for dental defects or minor physical ailments will be ordered to appear before the local board and be told that he has certain defects that, if corrected, will make him fit for service or defense industry work. He will be permitted to choose his own family physician or dentist and, when the defects are corrected, the fee will be paid by the federal government."

REGISTRATION

Registration on Sunday and Monday was unusually heavy which perhaps could be accounted for by the convenience of the location for local men. This unprecedented early attendance was largely responsible for the appearance of crowding and lack of adequate facilities.

OPENING SESSION

The opening address by President Glenn E. Cartwright, the presentation of the prize essays, the address of Franklin D. Roosevelt, which was rebroadcast to those assembled in the Grand Ball Room, and the two very inspiring addresses previously referred to marked Monday as having a varied and interesting opening day program.

COMMERCIAL EXHIBITS

Monday was also a busy day for the exhibitors. Remarks overheard throughout the day indicated some discomfort due to insufficient space but this was laughingly brushed off by reports of heavy buying.

LIMITED ATTENDANCE CLINICS

The overwhelming attendance at the limited clinics proved again that speakers of quality will always attract a large audience. Placing ticket and clinic headquarters on the same floor with the lecture rooms was highly praised.

MOTION PICTURES

The motion picture program again proved that it deserves a regular place in future Midwinter Meetings. Information presented in a pleasant and easily assimilated form is always a welcome interlude from the usual type of clinical program.

FINAL REGISTRATION FIGURES

Dentists

Chicago Dental Society	2,745
American Dental Association	3,497

Guests

Physicians	87	
Public Health Nurses	75	
Students	534	
Family	1,511	
Assistants	1,168	
Hygienists	96	
		3,530
Lay Guests		278
Laboratory Technicians		458
Exhibitors		1,517
Total		12,025

Drs. LeRoy Kurth and Hermann Becks Win Awards in Essay Contest

Thirty-Six Essays Were Judged by Western Reserve University Faculty Members

Dr. LeRoy E. Kurth, a Chicago Dental Society member, is the winner of the first award in the original essay contest to stimulate research in dentistry which was sponsored by the Chicago Dental Society. To him go the congratulations and admiration of his friends in the dental profession. His success is particularly gratifying to those who have watched him progress through the years.

KURTH

Dr. Kurth is a young man. Deeply interested in the whole field of full denture prosthesis, he has put vigor and serious thought into the problem and science of mandibular movements of the human masticatory mechanism. The culmination of his studies has found expression in the paper entitled" Mandibular Movements in Mastication," which brought him well deserved distinction. It is all the more worthy of praise when one considers that he has never held any college faculty appointments.

He has gone beyond the realm of everyday dental practice and has stimulated dentistry with a force that is vitally needed today.

To review his paper in these lines is unnecessary for it will be published in complete form in the near future. But the technical procedures followed in compiling his data may be of interest. Much time and effort was expended in preparing the material; hundreds of masticatory records were made, remade and made again. These were photographed, checked, re-checked, then each photographic plate was blocked and finally prepared for publication. High speed cameras to show accurately paths of movement were used to record actual processes. The work speaks for itself and must be read to be appreciated. Dr. Kurth's contribution will help clear up much of the confusion now existing in the field of mandibular mastication. Every practitioner, old and young, will derive inspiration and education from reading his paper.

BECKS

Dr. Hermann Becks, Dental Research Director of the University of California Medical Center at San Francisco, was awarded the second prize. The subject of his paper was "Dangerous Consequences of Vitamin D Overdosage." His discussion gave detailed results of experiments performed on dogs with various dosages of Vitamin D. He concludes from his studies: "A word of warning must be voiced to the dental profession and to the general public against the frequent recommendation of and the routine use of Vitamin D preparations for the arrest of dental ailments without a more profound understanding of their composition dosage, and toxicity level.

"The fact that animals develop pronounced pathologic calcifications (hardening) of various organs and tissues as the result of experimental hypervitaminosis D with severe pathologic changes in the oral cavity and jaws, should point out to us that the indiscriminate use of this drug harbors a potential danger of permanent harm to our patients."

There were thirty-six papers submitted in the contest. The final judges in the competition were faculty members of Western Reserve University School of Dentistry. The papers were numbered and submitted to the judges anonymously so that the authors remained unknown.

The Dental Service in Combat*

By Colonel George Edward Meyer, Dent. Res. U. S. Army

Dental service became a military necessity in 1901, and the years have witnessed a continuous growth of the small dental service of those days. Through wars and campaigns and in hospitals and schools and laboratories, the Dental Corps has progressed with the Medical Corps. Today it is an important division of the Medical Department, capable of assuming responsibilities in every medical installation.

In this period of expansion and training, the Dental Corps is identified with a majority of the Medical Department training activities and assumes important roles in the hospitals and field medical units. The experiences during the first World War revealed the potential possibilities of the dental personnel in combat. The present plans of the Medical service utilizes the dental officers with tactical units for important duties as auxiliary medical officers during combat.

The plan for the dental service provides that all needed dental care will be provided for combat troops during the training period. It is perfectly obvious that dental treatment within the combat zone must be limited to emergency service. For this reason, the equipment provided for dental personnel is limited to those items essential for this service. Serious wounds, involving the face and jaws, demand the special attention of dental officers. It is apparent that the character of dental service is entirely different within the combat zone. As auxiliary medical officers, dental officers assist in the care of all battle casualties and their evacuation. Division commanders, division surgeons, and regimental commanders frequently comment upon the outstanding service of the dental officers during combat in the first World War. Acting as regimental and battalion surgeons when medical officers were among the battle casualties, dental officers rendered excellent service. In fact, dental officers can assume nearly every responsibility resting upon medical personnel within the many aid stations or regimental and battalion installations along a battle front.

The training provided in the Medical Department program today includes an important phase in the treatment of battle casualties. Medical and dental officers pursue the same course in maxillofacial surgery. Dental officers also receive training in first aid and emergency treatment for all types of casualties. There is a splendid training providing for the care of gas casualties, for shock, hemorrhage, and the most common types of wounds encountered in the combat zone. Whether it be at a battalion aid station or any one of the installations of the Medical regiment or battalion, dental officers will be able to assume a variety of responsibilities common to each medical unit during combat. The teamwork essential in combat is evident in the present training effort.

New developments in the science and art of war have added greatly to the problems of the Medical Department. The primary mission of the medical service in combat is to conserve fighting strength. Prompt treatment and the early evacuation of casualties are most essential. Great advances in the care of the wounded have been made. Newer methods for blood transfusion, the importance of plasma to combat shock, the sulfonamide compounds to eliminate infection, and many other improvements in the care of casualties form an important part in the training program in which the dental officers participate.

The evacuation of casualties presents a most difficult problem. Progress is difficult in the development of facilities for the collection of the wounded and their safe movement out of combat zone. Modern methods of mechanized warfare have

*The Military Surgeon, 90:152 (February) 1942. Read before the Association of Military Surgeons, Louisville, Kentucky, November 1, 1941.

created almost unsurmountable difficulties. The armored units have greatly extended the combat zone in depth. This not only adds to the difficulties of evacuation, but brings new problems to the medical units following the rapidly moving armored organizations. The creation of the mobile medical battalion with the triangular division[1] was the first change in the medical service in combat to meet these newer problems in highly mechanized warfare.

Many plans and theories have been suggested to improve the mobility of the medical service and to facilitate the evacuation of the wounded. Some work has been done, using airplane evacuation between the division installations and the general hospitals. This seems to promise much toward solving the problems of evacuation. The Germans reported remarkable effects on the morale of wounded when using airplanes for the evacuation of hundreds of casualties during the German-Polish campaign.

Medical officers with armored divisions advocate armored vehicles for use as ambulances and as aid stations. While the solutions to many of these problems are still undetermined, it is certain the studies now underway in the Surgeon General's Office will result in effective measures to assure satisfying results.

The dental officers must fit into the new organizations and it is certain they will render valuable service. The frequency of facial wounds, while high in past wars, is found to be even higher in mechanized warfare. In the care of these face and jaw wounds and also as assistants in the lengthened lines of evacuation, we can anticipate the valuable efforts of the dental officers. This service becomes more important in the changing methods of warfare.

One cannot look forward to the serious business of combat and plan for the determined and successful operation of the medical service without a thorough survey of the months of preparation for such service.

In the medical replacement centers, at the Medical Field Service School, at the many general hospitals, and in every tactical unit, training is the major concern of all personnel. Whether it be for tactical instruction, for the development of smooth running and efficient field installations, or the varied and important professional training—the great purpose behind it all is to assure our nation of an adequate medical service prepared to meet the responsibilities of combat. In all this great program, with the enormous expansion of our Medical Department, the Dental Corps is participating as never before. The contributions of the dental personnel exceed any previous effort. The teamwork exemplifies the spirit of medicine in keeping with the finest traditions of the past with significant indications of a unity and determination characteristic of American professional men facing a serious task.

Memories carry one back over previous wars of our time. The days of the Philippines when dental officers were unheard of. The contract dental surgeon appeared occasionally and showed the customary fortitude of real Americans. Untrained in any first-aid measures, he did what he could. In the first World War period, dental officers achieved splendid results in their efforts to assist in the care of the wounded. At one field hospital a dental officer served almost continually as an anesthetist for nearly forty-eight hours. Records disclose several serving as regimental surgeons in the combat zone. Division dental surgeons often pushed through the thickest of combat to save the wounded. Some lie in France today—real heroes of battle! Many deeds of valor and hundreds of instances of untiring efforts in the care of casualties within the combat zone brought a new era for the dental personnel of the Army—the era of greater usefulness and professional advancement which has been inspiring to every dental officer since that period of re-birth. The

(Continued on page 27)

[1]For the information of non-military dentists, the medical regiment was the approved organization for medical troops with the square division (strength of approximately 25,000 men). The medical battalion is the now approved organization serving with the triangular division (strength of approximately 12,000 men).

THE COMMENTATOR

"JOE DOAKS" COMMENTS ON THE MIDWINTER MEETING

Editor's Note: Comments on the Midwinter Meeting are invited and those which the editorial board deems worthy will be published.

Joe Doaks was sitting in the lobby of the Palmer House, his hat on the back of his head, his overcoat open and an exhausted look on his face. It was Thursday afternoon, the last of the four days he had spent at the great annual Midwinter Meeting of the Chicago Dental Society. He was trying to gather courage to face the icy blasts which came off the lake and whipped through the "L" structure above Wabash Avenue.

As his eye was wandering aimlessly over the assembled cross-section of humanity that can be seen in any hotel lobby, he noticed an important looking man coming in his direction. Could it be? Yes, it was—Dean Burton of the college Joe had graduated from just twelve years ago.

"Hello, Dr. Burton, I don't suppose you remember me—I'm Joe Doaks—class of 1930."

DEAN BURTON SPEAKS

"Why, of course, Joe—glad to see you. Have you enjoyed the meeting? Certainly a wonderful help to a man in private practice, isn't it? Sorry, but I have to move along—an important faculty meeting at school. Come and see us some time, won't you?"

Joe was left with his voice within him; he couldn't do more than wave a goodbye. Well, Dr. Burton was a busy man and important, too; one couldn't expect him to stop and talk with every old grad he met.

Joe sat down again to think back to those days at good old Siwash—his school. He had just completed a mental picture of the clinic when he was aroused by a tap on his shoulder.

"Hello, Joe, where have you been all week—making so much money you can't even spend a day here to meet your old pals?" Sure enough, it was Bob Wheeler, the play-boy of the class of 1930. His folks practically owned a small Wisconsin town and Bob had married a rich girl from a neighboring town. He looked like ready money, and Joe was conscious of the frayed spots on his overcoat as he answered.

"Hello Bob, glad to see you. Having a good time?"

OLD STUFF

"Sure, that's why I come to these meetings. Not to listen to a lot of the same old stuff we had crammed into us at school. Anybody can see with half an eye that these things are set up to give the big boys a chance to strut their stuff. Why, just think how nice it looks to have your name in the program! How about coming with me? I've got a date with a blonde and I think she has a sister."

"No thanks, Bob, my wife is waiting dinner for me at home. Will you be down again next year?"

"Absolutely," was Bob's parting answer, "I wouldn't miss this chance for some fun for anything."

He was gone, coattails flying and with a happy look in his eye.

Joe sat down a third time. His mind's eye went back over the men he had seen at the various clinics and lectures. Most of them were like himself—some younger, some older—all trying to make a living in one of the least appreciated lines of endeavor and yet one of the professions in which a man probably spends more time in self-education after graduation than the public will ever realize.

Was Dean Burton right? His words came back to Joe has he sat there with eyes open but seeing nothing. *Certainly*

(Continued on page 24)

EDITORIAL

DENTAL SERVICE FOR THE ARMED FORCES Dentists who are now in the Army and Navy Dental Corps and those who soon will be inducted have an exceptional opportunity to develop interest in dental health and to instill an appreciation for dentistry among the thousands whom they will serve in the armed forces.

That the dental corps served with distinction in the last war is indicated in an article by Dr. George Meyer appearing elsewhere in this issue. However, the stories still persist about the inadequacies of treatment and the lack of appreciation which the service men developed because of the treatment they received during that period. Similar rumors are now being heard. These derogatory statements, whether based on fact or friction, are disquieting. We realize that under the stress of preparation for combat and during the rapid expansion of the service, ideals are difficult to maintain. We also are aware of the psychological handicap that accompanies dental treatment and the tendency which exists to adversely exaggerate impressions. Criticisms which will not help the cause of dentistry are bound to occur.

Since the last war, local anesthesia has been developed to a high plane of efficiency; x-ray technic and other methods for diagnosing oral conditions have improved, dental materials and operative technics have been perfected. Dentists are equipped as never before to render needed health service in a manner that will be appreciated. Each member of the corps is charged with the responsibility of rendering that type of service. This is a serious professional obligation as well as an opportunity. Those in the administrative positions should and will, we are sure, encourage this view allowing adequate time and material for its accomplishment. There should be no double standard of treatment; the same service should be accorded to all. The men in the armed forces today are the heads or future heads of families. The impressions they obtain of dental health service through their army and navy contacts will have a far reaching influence on the public attitude toward dental health and indirectly on the welfare of dentistry.

PRELIMINARY SPEAKERS AT MONTHLY MEETINGS For a number of years the monthly meetings of the Chicago Dental Society were preceded by a dinner. The attendance at these dinners usually was not great and to increase their popularity, prominent persons were secured to speak briefly on non-dental subjects. Such topics were selected because professional men should and do have cultural and civic interests. But the attendance did not materially increase so the dinners were discontinued.

Some of the dinner speakers in the past gave excellent talks and it was to be regretted that only those who attended the dinners were able to hear them. In fact, complaints were forthcoming to the effect that it was wrong to deny these fine discussions to the many who could not attend the dinner. The officers met this criticism by having preliminary speakers at the monthly meetings, thus permitting the entire membership to hear these features without the necessity of buying dinner tickets.

The majority of our members practice outside the loop and have evening office hours; they find difficulty in being punctual at early meetings. Dental meetings are notoriously late in starting and if the scientific program is scheduled to start at eight o'clock, a large part of the audience arrives after the speaking has begun. This is disturbing to the essayist and to those already seated. Having a preliminary speaker and a business meeting prior to the principal speaker allows the audience to become settled while being entertained and informed. We believe good, interesting, preliminary talks serve a worthy purpose and should be continued. They should be started promptly at eight o'clock with the understanding that the speakers complete their remarks in the time allotted.—*Robert G. Kesel.*

NEWS AND ANNOUNCEMENTS

DR. E. A. ZIMMERMANN 1894-1942

Dr. Edward A. Zimmermann passed away on February 14 after a lingering illness of 2 years. He was a general practioner with offices at 6901 South Halsted Street. Dr. Zimmermann was born October 1, 1894, attended Northwestern University Dental School and graduated in 1917.

After serving with the American Expeditionary Forces in France, he returned to Chicago and had been in practice on the south side until the time of his death.

He was a member of the American Dental Association, the Englewood Branch of the Chicago Dental Society, and the Southtown Dental Study Club. He was always considered by fellow practitioners as an outstanding operator in general practice and as such was admired by many.

His hobbies were golf, hunting and fishing and he instilled the love of these into the minds of his two sons.

Surviving him are his wife, two sons, a daughter and his parents.—*Milton Cruse.*

SYMPATHIES EXTENDED TO DRS. DAVIDSON AND HURLSTONE

The Society regrets to announce the recent deaths of the father of Dr. Christian Davidson, Vice-President, and the mother of Dr. Frank J. Hurlstone, Director of the Chicago Dental Society.

The other officers and members of the Society extend to them their sincere sympathies.

CALENDAR OF SOCIETY EVENTS

March 10th: West Side Branch: Regular monthly meeting. Dr. Fred N. Bazola, speaker, *Crown and Bridge.* Dinner, 6:30 p.m. Meeting, 8:00 p.m. Graemere Hotel.

March 10th: Englewood Branch: Regular monthly meeting. Dr. LeRoy E. Kurth, speaker. Dinner, 6:30 p.m. Meeting, 8:00 p.m. Hayes Hotel.

March 13th: Northwest Side Branch: Regular monthly meeting. Dinner, 6:30 p.m. Meeting, 8:00 p.m. Lions Club.

Gallup Survey of Common Colds: In the one week period ended December 24 a survey by the American Institute of Public Opinion, of which George H. Gallup, Ph.D., Princeton, N. J., is director, found colds reported in one third of American homes, with an estimated total of 18,000,000 persons afflicted, according to the New York *Times,* January 3. More than three million man days of work were lost in war industries or war connected industries from illness during December, and the common cold accounted for half of this lost time, it was stated. In the one week survey, ended December 24, the highest incidence of colds was reported among children under 10 years. Among the 18,000,000 cold sufferers in this period, about one in four was treated by a physician.—Medical News. *J.A.M.A.* 118:240 (January 17) 1942.

Tons of Dust Fall Annually on Chicago: The smoke abatement department has reported that a monthly average of 55.2 tons of dust per square mile fell last year in Chicago as compared with 54.1 tons in 1940. The downfall of dust at twenty-two stations throughout the city is the measuring stick used to determine the average. May was the dustiest month with 84.3 tons per square mile, compared with 59.6 in the same month in 1940. Increased industrial activity was said to be responsible for much of the 1941 gain. It was also stated that defense activity had forced many Chicago firms to use cheaper grades of coal, which make more smoke unless fired properly. The station located on the top of the building at 33 North La Salle Street, one of two stations down town, had the greatest dust fall, averaging 134.9 tons per square mile monthly. Among the outlying stations the one at 3532 Sheffield Avenue had the highest average with 81.7 tons of dust per square mile monthly. The cleanest outside station, according to the report, was at 1620 West Ninety-Ninth Street with a dust fall of 32.8 tons per square mile monthly.—*J.A.M.A.* 118:153 (Jan. 10) 1942.

Differential Diagnosis and Treatment of Pains About the Head*

By Percival Bailey, Ph.D., M.D., Professor of Neurology and Neurological Surgery, University of Illinois, College of Medicine

Whenever a physician cannot immediately arrive at a reasonable explanation of pains about the face, he is almost sure to advise an examination by the dentist as part of his routine diagnosis. But, if the dentist finds the teeth sound, a dilemma arises in which all too often the extraction of teeth is started. The patient, as well as the physician and dentist, knows that most pains around the face are of dental origin and brings pressure to bear which the dentist finds hard to resist, especially if the physician also yields to the insistence of the patient.

PHYSICAL EXAMINATION

It is presumed, of course, that every patient will have a complete, careful examination, and here the physician has a distinct advantage over the dentist if he is only thorough and conscientious. Take, for example, the colored woman of 50 years who complained of dull aching pain, intermittent but with no sharp jabs, in the left infraorbital region and upper jaw. There was no history of sinus infection and the teeth seemed to be in good condition. Among the incidental complaints elicited in taking the history was one of itching of the vulvae. Examination disclosed a marked edema of the vulvae and further investigation showed the cause to be a carcinoma of the rectum with widespread metastases in the pelvis. The involvement of the maxillary nerve was judged probably to be by a metastasis, the nerve was injected with alcohol, with relief of the pain, and the patient was discharged.

The pain in this case was of the character associated with actual organic lesions of the nerve. It illustrates the necessity of taking a careful history and making a complete examination whenever a patient comes for the first time complaining of pain of obscure origin in the face.

We will not discuss at length dental pain which is so much better known to you than to me. Perhaps a few words might be said about that caused by third molars. As is true of other teeth to a lesser degree, the pain arising from a third molar may radiate to include the entire jaw, even the entire trigeminal area. But it should be emphasized that the pain never radiates to the opposite side of the face. The lower third molar is especially liable to cause trouble. Its roots are in close proximity to the inferior dental nerve, may even enclose it. This tooth, if impacted, may cause pain because of the pressure exerted against the root of the second molar. This pain may be very misleading because it is so often referred into the ear or down the side of the neck. Any pain in this location should make the physician inquire into the condition of the third molars. It can be relieved by removal of the offending tooth or by the removal of the second molar.

POST EXTRACTION PAINS

Sometimes the opposite occurs and the patient begins to complain of pain after teeth have been removed.

M. G., a woman of 35, complained of pain in the right side of the face of four years' duration. The pain was described as aching, with sharp exacerbations. She dated the pain from the extraction of two decayed teeth from the right lower jaw. Immediately afterwards she had this pain which never had entirely left her. Other teeth were extracted from the same jaw without relief. For a month she had had pain also on the left side of the face.

*Read before the Oral Surgery Section of the Chicago Dental Society Midwinter Meeting, February 19, 1941.

Examination was entirely negative except for the absence of the teeth of the right lower jaw. Because of the character of the pain and its rather diffuse localization, treatment was begun by an alcohol injection of the third division of the right trigeminal nerve. Anesthesia and relief of the pain resulted. It returned in nine months. Because of the relief obtained by the injection, a partial resection of the sensory root was made resulting in anesthesia over the second and third divisions of the right trigeminal nerve and relief of the pain in that area. But the patient began to complain of pain in the right first division and finally two years later the resection of the sensory root was completed. A dull ache remained back of the right eye. She has continued to complain of this pain which she claims is often severe starting back of the right eye and passing into the right temple. The pain is made tolerable by sedatives.

That the extraction of the teeth had any essential etiological relationship is unlikely even though the history may be correct. The further course suggests that there is a large functional element in this case which should have been carefully investigated. I may, in this connection, relate another case to illustrate.

EMOTIONAL CAUSES

Another woman of 35 complained of pain of two and a half years' duration in the right jaw and cheek radiating to the neck. The pain was described as sharp and constant during the attacks. At first the attacks came on at her menstrual periods but had become much more frequent. Her right maxillary sinus had been washed out on several occasions. The teeth had been repaired but none extracted.

Examination was entirely negative. The patient seemed highstrung and nervous, cried readily, and quickly responded to questioning concerning her emotional troubles. She had wanted to be a nun but this plan was opposed by her parents. She was persuaded to marry a young suitor for whom she felt very little attachment. The experience of her wedding night gave her a permanent resentment against her husband. Probably her pains at first were migrainous, but she soon found she could use them to avoid sexual relations with her husband who then sought consolation elsewhere. She wanted a separation but her priest advised against it.

She was an intelligent woman who accepted this explanation of an emotional basis for her troubles. A mild sedative was sufficient to relieve her pain.

SINUSES

The pain which must be most often differentiated from dental pain is doubtless that of sinus origin. Inflammation of the accessory nasal sinuses is rarely of dental origin, with the exception of the antrum into which a root abscess of a tooth in the upper jaw may extend. But the pain which arises from inflammation of the antrum is not always easy to differentiate. Of course, in a case in which the antrum is full of pus discharging into the nose, there is no difficulty, but in chronic less-purulent cases the differentiation is not always easy. In such a sinus infection the pain sometimes seems predominantly localized in the teeth, just as conversely the pain from a dental abscess may seem to involve the entire maxillary nerve. One goes about the diagnosis systematically. The teeth are examined carefully with x-ray photographs. The antrum (also the other sinuses) is then transilluminated, its foramen observed and an x-ray photograph made. The problem is usually solved in this way. But suppose it is not. Then the procedure is to seek further for a possible cause and to resist pressure to act on the basis of probable causes. The patient continues to suffer and both the dentist and physician have a tendency to make a therapeutic test, each in his own field. This impulse is usually wrong for many other causes exist to mislead the unwary clinician.

For example, the infection may be in

the ethmoidal cells and not in the antrum. In such cases Sluder has described how the pain may be referred to the roof of the mouth extending into the cheek. He accounted for this distribution of the pain by supposing that the sphenopalatine ganglion was irritated. Cox believes that the pain in Sluder's neuralgia is due to involvement of the nasociliary branch which is an old deep ophthalmic nerve, phylogenetically the nerve of the first branchial cleft. I have seen several such cases relieved by injection of the sphenopalatine ganglion, usually after the antrum had been opened and washed repeatedly and most of the teeth removed.

The pain from sinus infection may persist after the original infection is cured. A history of previous sinus trouble should be carefully inquired into in every case of facial pain.

POSTINFECTIOUS NEURALGIA

M. K., a man of 32, complained of dull pain in the middle part of the right side of the face for three years. He had had an infection of the right antrum accompanied by severe pain in this region. The antrum was opened and drained, but the pain continued as a dull, aching sensation in the infraorbital region of the upper jaw. It was much worse when he was tired or nervous or ill, relieved by sedatives but always returning. His face was also sensitive in this region. He noticed this especially when he shaved. He had had many treatments, the teeth had been removed, the sinus repeatedly washed, various intravenous injections given, the sphenopalatine ganglion injected, and so forth. He had lived for a year in Arizona, thinking that the dry climate might bring relief.

X-ray photographs demonstrated gross thickening of the lining of the right antrum. There was a large opening low down into the antrum from which there was no discharge. An injection of the maxillary nerve was proposed but rejected.

This is a typical case of postinfectious neuralgia. It is possible that the pain would have been relieved by an injection of alcohol central to the pathological involvement. Resection of the root was not advised.

MIGRAINE

Another frequent cause of difficulty is encountered in a disease of protein manifestations known as migraine. Migraine is a common disorder which affects both men and women, but the latter more frequently. There seems to be definitely a hereditary factor in its causation which may often give the physician a lead to the true nature of a facial pain if he can obtain a history of sick headaches in parents or other members of the family. In the usual case of migraine the pain is in one side of the head, accompanied by a feverish feeling, nausea, vomiting and often visual disturbances. Sometimes the pain is in the face. I have seen several cases in which the pain was confined to the cheek and infraorbital region. This pain comes on gradually, usually is present in the morning, becomes slowly worse to reach a climax in the evening and the following day it is gone. If such attacks come only once a month or at intervals of several months, especially if accompanied by other manifestations of migraine in the form of nausea or photophobia, the diagnosis is readily made. But in some cases the pain comes in spells during which it recurs every day for a week or more. In these cases the diagnosis rests on the familial history plus other manifestations of migraine which may be present, plus the absence of any of the usual causes of pain in this region.

F. T. V., a woman of 45, presented with severe pain in the right cheek and jaws for 10 years. This pain came on in spasms lasting for several minutes and spread from the cheek to the region of the ear. They recurred every few hours and interfered seriously with the patient's work.

The teeth had all been removed and

the mandible curetted on two occasions with no relief. The pain was excruciating and drove her repeatedly to seek relief. The antrum was opened, the nerves injected with alcohol and finally the sensory root was cut with resulting anesthesia of the lower part of the face, but the pain continued. The cervical sympathetic trunk was interrupted without result. The seventh nerve was injected but no relief. As the only other possible route for the pain sensation it was proposed to cut the sensory roots of the upper cervical nerves but the patient wisely refused.

She seemed a sensible, well-balanced, hard-working woman. Even investigation under amytal failed to disclose emotional conflicts. She was discharged without any solution of her trouble having been reached. It was probably an atypical migraine. This pain has often been thought to be of sympathetic origin. The question of pain of sympathetic origin is still disputed. Some surgeons say they have obtained pain by stimulation of the superior sympathetic cervical ganglion. Others have failed to do so. It seems generally agreed that all the fibers in the cervical sympathetic system are motor fibers, hence any pain caused by its action would have to be carried to consciousness over some other route and the mechanism whereby such pain would be caused is not understood. In too many of these cases the diagnosis is arrived at only after the antrum has been opened and the teeth extracted.

TRIGEMINAL NEURALGIA

As a neurosurgeon I have naturally come upon numerous cases of trigeminal neuralgia, in nearly every one of which the question of differential diagnosis from dental pain has arisen. Essential trigeminal neuralgia (Fothergill's disease) is an atrociously painful malady of unknown etiology. It usually afflicts elderly people but may attack healthy young adults. In a well developed case the pain is very typical. It comes on in spasms of violent lancinating pains which shoot into the involved area like an electric shock for a few seconds and disappear. In the interval until the next spasm the patient is perfectly comfortable, no pain or tenderness lingers, and the area involved is not swollen or tender to pressure. But there is usually an area from which the pain can be originated. This is known as the trigger zone; any stimulation of it by a breath of cold air, water, food, rubbing, or just movement, is enough to set off an attack of lancinating pain. For this reason the patient soon learns to protect herself by not talking, eating or washing the face.

DIAGNOSIS

In the diagnosis of trigeminal neuralgia it is very important to secure a good description of the pain. Pain of dental origin may result from drinking cold water or eating sweets, but is of somewhat different character, swelling in crescendo to a climax and fading slowly away, rarely having the lightning-like characteristics of the pain of true essential trigeminal neuralgia. Moreover if the dental pain lasts for any time, it is usually accompanied by tenderness of the tooth involved and swelling of the gums. Tenderness of the trigeminal branch at its emergence from the bony foramen may be present which persists even between paroxysms of pain. Nevertheless in the early stages these evidences of inflammation may be absent.

These spasms of pain may appear to the patient to originate in a definite tooth, and she usually becomes insistent that it be removed. Invariably she finds someone who will accommodate her, only to find that the pain then appears to be from an adjacent tooth; this also is extracted and the process goes on, even to teeth on the opposite side of the jaw. The only way to avoid these holocausts is for the dentist to refuse to extract teeth which he cannot prove to be diseased.

F. S., a man of 63 years complained of pain in the left lower jaw for four years. He was treated by a dentist who

removed all the teeth of that jaw but the pain persisted. The pain was sharp, shooting, and there was a definite trigger zone under which he insisted that there must be a root fragment left by the dentist. X-ray photograph failed to disclose any overlooked roots or any pathological process. Pressure on the zone indicated, however, always elicited a sharp attack of pain.

ALCOHOL INJECTIONS

The left third division was injected with alcohol with complete relief of pain. He returned two years later with a recurrence of the pain. At this time the sensory root was avulsed. The result was a complete anesthesia of the face and relief of the pain. But six months later he was back complaining of a burning pain in the entire left side of his face. He had also blistered it with a hot-water bottle.

This burning pain, of which many patients complain after trigeminal neurectomy, is most annoying and impossible to stop. It is certain that not all sensation in the region of the face is carried to consciousness over the trigeminal nerve but its exact pathway is unknown. A very similar pain follows resection of the median nerve in the forearm. It was first described by Weir Mitchell who called it causalgia. Many physicians believe it to be of sympathetic origin, but this is disputed. In some of my cases removal of the sympathetic connections did not relieve the pain.

The diagnosis of essential trigeminal neuralgia is based on the nature of the pain plus the absence of any demonstrable cause for pain. The dentist, as well as the physician, should learn to take a careful history as well as to look at the teeth. Much useless surgery would be avoided if this were done. In case of doubt one should inject the nerve with novocaine solution. Sometimes an essential neuralgia will be relieved for a long time by this simple procedure. The pain of dental or sinus origin will return as soon as the anesthesia wears off. I have often injected the maxillary or mandibular nerve with ½% novocaine solution, using a large quantity, as much as 25-50 c.c., with relief of essential trigeminal pain for months. I do not know the mode of action of this treatment, perhaps just from stretching of the connective tissue about the nerve. A similar method often gives relief in sciatic neuralgia.

NERVE DISTRIBUTION

Pain from the greater part of the area in which we are interested is carried to consciousness by branches of the fifth cranial, sometimes called the trifacial, nerve. Not only does this nerve supply the face, with the exception of the angle of the lower jaw, but also the homolateral accessory nasal sinuses, nasal cavity, teeth, tongue, gums, cheek, hard palate, the anterior wall of the external auditory canal, eyeball, meninges of the supratentorial cavity including the upper surface of the tentorium cerebelli, and the anterior half of the scalp. It is important to realize that the facial nerve carries pain fibers also from a very small area on the postero-mesial surface of the pinna and also around and partly within the external auditory canal. This branch causes pain in cases of Bell's palsy and more rarely following herpes zoster which attacks the geniculate ganglion and is doubtless due to involvement of the small number of pain fibers which have their cell-bodies in the geniculate ganglion. Pain in the same region, which is not followed by paralysis, is doubtless of the same nature.

But pain in and around the ear cannot certainly be attributed to the seventh nerve. It may also be due to involvement of the great auricular (2nd and 3rd cervical ganglia), auriculotemporal branch of the fifth nerve, the tympanic (Jacobsen's) twig of the ninth nerve, or the auricular (Arnold's) branch of the tenth nerve.

The glossopharyngeal nerve is also affected by the same sort of essential neuralgia, and, since the pain in such cases

may be radiated to the ear or felt in the back of the lower jaw, it may be confused with pain from a lower third molar. The pain in such cases is carried over Jacobsen's nerve which passes from the ganglion petrosum to the tympanic plexus in the middle ear, innervating the mucous lining of the tympanum, Eustachian tube and mastoid cells. The differentiation is made on the character of the pain plus the demonstration that the corresponding third molar is all right. I know of no other type of pain with which it may be confused except that arising from a neoplasm developing somewhere along the course of the nerve. The pain in such cases is also lancinating, paroxysmal, with a trigger zone in the tonsillar fossa. The pain radiates into the tonsil and ear usually, but may be confined to either the fauces or ear. It can be relieved only by section of the nerve.

TUMORS

The pain caused by malignant tumors developing in the antrum may be mistaken for dental pain since it involves branches of the maxillary nerve which descend from the infraorbital region to the teeth. One instance in a colored woman I have related to you. The pain resembles very closely dental pain and, there being no fever or other evidence of infection, teeth are very apt to be removed. But, when all dental pathology is cleared up, the patient will be further examined and an x-ray photograph makes the diagnosis. Since the tumor develops within a cavity in the maxillary bone no external evidence of tumor is seen, at least in the early stages.

Rarely neuralgia may result from skull fracture which has involved the second branch of the trifacial nerve or the nerve may be caught in scars of various origin.

I have seen a few cases of pain in the trigeminal region caused by disease of the central trigeminal pathways, such as tumors, and more rarely syringo-bulbia or thrombosis of the inferior cerebellar artery. I have observed also several cases of trigeminal pain due to degenerative lesions in the trigeminal pathways in multiple sclerosis. Repeated injections of alcohol or section of the sensory root relieve the pain.

The trigeminal nerve may be irritated in its intracranial course. Such cases are rare and may be very confusing. Dandy has shown how small tumors may lie just where the nerve pierces the dura mater and cause pains very difficult to distinguish from those of essential neuralgia. I have treated one such case which had been twice operated on peripherally for trigeminal neuralgia before coming into my hands. Needless to add, the teeth had been removed and the sinuses washed.

Pathological conditions other than tumors may cause similar pains, for example, aneurysm of the carotid artery. Usually it develops in young people from a congenitally weak place in the arterial wall. Any sudden strain may cause bleeding to occur from this weak area. Since the trigeminal nerve is nearby, it is irritated, usually the ophthalmic branch.

These rare conditions are diagnosed from accessory neurological findings and need not detain us further. I have seen also a few elderly women who complained of a burning tongue and insisted that their teeth must be the cause. Although I did not suggest it, one of these had her teeth removed but the burning continued.

In addition to these various conditions which can be definitely determined to cause pain about the jaws and face, not infrequently patients come to the clinic and continue to complain bitterly of such pains even though no organic cause can be determined. Before resorting to surgical measures in such cases it is wise to have the patient examined by a good psychiatrist. Often, as in the case I have already related to you, emotional or social stresses are found, the relief of which greatly ameliorates or removes their sufferings.

If any lesson may be drawn from these cases it is that dentists should refuse to remove teeth unless they know them to be diseased, even though urged to do so by a physician.

QUOTATIONS AND ABSTRACTS

Candy, Caries and Delayed Eruption of Teeth: What is the latest information regarding the influence of candy and other sweets on the teeth of children. Can candy be the cause of caries, and, if so, why more so than the use of sugar on cereals or other foods? In the presence of an otherwise well balanced diet and proper vitamin intake, could the use of sugars have any influence on the delayed eruption of the permanent teeth?

ANSWER: According to present knowledge, candy and other carbohydrates are conducive to caries, the more freely fermentable ones being more detrimental. The effect of the carbohydrates is purely local on the enamel surface and promotes bacterial activity leading to caries. Candy is more "caries promoting" than the sugar used on cereals since it contains much more carbohydrates and remains in the oral cavity for a longer time.

There appears to be no clinical evidence or experimental basis for any influence of sugars on the eruption of the deciduous or permanent teeth.—Queries and Minor Notes. *J.A.M.A.* 117:1404 (October 18) 1941.

Relationship of Arthritis to Oral Infection: In recent years the focal infection theory of chronic arthritis has been the target of much criticism. The result of defocalization have not always been good; however, M. Shuster reports that such treatment deserves an important place in the therapy of chronic infectious arthritis. In his study of 468 patients who had arthritis for less than six months, the teeth of 366 were removed and 150 of these were improved. The tonsils of 78 were removed and 39 were improved, and of 24 patients who had sinus surgery, 3 improved. Of the 317 patients with arthritis for more than two years, 43 of 215 were improved by the removal of teeth, 21 of 84 after tonsilectomies and 1 of 18 after their sinuses were treated. Thus the removal of foci was approximately twice as effective in the early cases as in the late stages of the disease. It will be noted that even in the early cases less than one half of the patients reported any improvement.

Some of the reasons which may be responsible for the failure of focal surgery are 1. not every infected tooth or tonsil is the cause of focal infection, 2. secondary foci may be present if the focal infection is of long duration, 3. not infrequently the infected focus is incompletely removed, 4. removal of infected foci if postponed too long can scarcely be expected to improve the disease in its terminal stage, 5. surgery may activate a walled-off focus and such trauma may promote the development of secondary foci. In spite of possible complications the author believes that except in cases of rheumatic heart disease, foci should be removed as early as is compatible with safety.

The author also believes a short course of streptococcus vaccine is indicated, to reduce the incidence of exacerbations after defocalization. The statement that streptococcus vaccine has failed in the treatment of chronic infectious arthritis should not be accepted before some of these reasons for failure are analyzed: 1. Vaccines are often prepared from noninfecting or nonetiologic foci. 2. The autogenous vaccine prepared often consists only of the predominant strain, and such a strain may be nonpathogenic. 3. Stock streptococcus vaccines have often been employed. Most bacteriologists agree that stock vaccines are no better than non-specific therapy. 4. Vaccine therapy is sometimes begun too late in the stage of the arthritis when the symptoms are not due to infection but to articular derangement. 5. Dependence should not be placed on vaccine therapy alone; orthopedics, physical therapy, massage and corrective exercises are indicated. 6. Vaccine therapy is often discontinued too soon. 7. Improper dosage is often responsible for poor results. Experience has shown that small doses are effective. The author has used streptococcus vaccine for chronic arthritis for the last sixteen years.—Shuster, M. Relationship of Arthritis to Oral Diagnosis Defocalization and Streptococcus Vaccine Therapy. *Am. J. Orth. & Oral Surg.* 27:149 1941.

Focal Infection: Assay of the probable importance of focal infection from the clinical standpoint alone as it concerns heart disease, chronic infectious arthritis and glomerulonephretis has convinced these authors from the Mayo Clinic that elimination of probable foci is important. In their study of patients suffering from chronic nephritis with intermittent exacerbations of the acute phase, more than 80 per cent have evidence of chronic infections about roots of teeth, in the tonsils, or in the sinuses. They feel that clearing up such foci as soon as possible, not only shortens the convalescent period of the acute episode but, in addition, helps to protect the patient from further damage to the kidney. On the basis of their clinical experience alone, the authors feel that patients suffering from conditions which might be caused by focal infection should have all possible foci treated or removed.—Slocum, C. H., Binger, M. W., Barnes, A. R., and Williams, H. L. *J.A.M.A.* 117:2161 (December 20) 1941.

Bulletins of the Committee on Pharmacy and Therapeutics of the University of Illinois

Editor's Note: The following Bulletin is the fourth of a series that is being issued by the Committee on Pharmacy and Therapeutics of the University of Illinois. Their purpose is to offer information about various types of pharmaceutical preparations that are being offered the professions in almost unlimited numbers. No doubt confusion exists in the minds of many as to just what preparation is most practical, efficient and least costly for the treatment of a particular condition. The reports are brief and of a review nature, making them suitable for publication in THE FORTNIGHTLY REVIEW. *Permission has been granted to publish those of dental interest.*

IV. VITAMINS[1]

PART I. THE OIL SOLUBLE VITAMINS

The literature dealing with vitamins has attained colossal proportions and increases daily. These pages present fundamental information about the accessory food factors and summarize recent conservative information regarding the clinically important vitamins as well as data concerning some of the other factors giving promise of value in human nutrition.

VITAMIN A. (AXEROPHTOL)

The role of vitamin A in human nutrition is based on the fact that a characteristic eye disease, xerophthalmia, results from the deficiency of this vitamin. It has been definitely established that there are at least five substances which produce to some degree a characteristic response in the animal body. There is vitamin A itself, which is found in the animal body, and its four precursors, alpha, beta, and gamma carotene, and cryptoxanthin, which are produced in the plant kingdom. The extent to which these different substances are converted to vitamin A by various species of animals has not been definitely established. The nature of the exact function of vitamin A is still in various stages of investigation and no definite statements can be made.

It is, however, generally agreed that the first symptom, or at least one of the symptoms as far as the clinical picture of vitamin A deficiency is concerned, is night-blindness, or nyctalopia. Cases of nyctalopia do exist, however, which do not respond to treatment with vitamin A. This may be due to diseases other than avitaminosis A. Evidence is accumulating now to show that riboflavin and ascorbic acid are needed for the proper assimilation of vitamin A. It should be pointed out that any claim to the effect that the administration of vitamin A will reduce the chance of accident from driving at night is not acceptable.

Indications at present are that vitamin A aids toward the establishing of resistance of the body to infections only when there has been a depletion of body reserves of the vitamin and the intake or ingestion of vitamin A is inadequate. It definitely has not been shown to be specific in the prevention of colds and other types of infections.

The influence of liquid petrolatum on the absorption of vitamin A has been investigated in recent years. While the absorption of the vitamin itself is not impaired as much as its precursors, in the presence of mineral oil, there is still a consistent loss of vitamin A in the feces. It is recommended that the mineral oil be used regularly only if the patient's vitamin A intake is ample.

[1]Bulletin No. 16. Manuscript submitted by Dr. Ernst R. Kirch, Department of Chemistry, University of Illinois College of Pharmacy.

The evidence to warrant the claim that the intake of vitamin A will prevent the formation of renal calculi, or that it is useful in the treatment of hyperthyroidism, anemia, sunburn, and degenerative conditions of the nervous system, is inadequate.

VITAMIN D

There are several substances which have a function in the proper utilization of calcium and phosphorus. Two forms of the naturally occurring vitamin D have been isolated, while other forms have been obtained in pure crystalline form as products of ultraviolet irradiation of sterols.

Reports have appeared claiming a clinical improvement in chronic arthritis as a result of the use of massive doses of vitamin D. There is not enough clinical evidence on hand, however, to claim that these massive doses of this vitamin are beneficial in the treatment of chronic arthritis, allergic disorders, and in psoriasis.

Vitamin D is recognized as a specific in the treatment of infantile rickets, infantile tetany, and osteomalacia. During acute infections, especially of the gastrointestinal tract, vitamin D may prove ineffective because it is poorly absorbed.

Direct exposure of the skin to sunlight or to ultraviolet light from artificial sources results in the formation of vitamin D within the organism. The Council on Pharmacy and Chemistry of the American Medical Association has not recognized statements that vitamin D has all the beneficial effects of exposure to sunshine.

Hypocalcemia of parathyroid tetany has been corrected by the use of vitamin D because of its effect upon the level of serum calcium. It should be pointed out, however, that patients under such treatment must be under constant observation, since the level of the serum calcium may be elevated above normal levels and thus be accompanied by serious, or even fatal, effects.

VITAMIN K

Vitamin K and vitamin K active substances, insofar as is known at present, have only one function and that is to insure the formation of the proper amount of prothrombin. It, therefore, plays an important indirect role as far as the coagulation of blood is concerned. The physiology of this vitamin is still unknown.

Some of the fat-soluble vitamins, including vitamin K, are not absorbed when the flow of bile is obstructed, and the synthesis of prothrombin in the liver does not occur unless vitamin K is available. Obviously, it is necessary to administer bile salts with vitamin K when prothrombin deficiency is due to bile obstruction and the vitamin is given orally.

As a dietary deficiency, avitaminosis K, while admittedly rare, does exist. Vitamin K and its analogues seem to be specific in the treatment of the physiologic hypoprothrombinemia of the newborn, which exists during the first week of life. There are many reports, too numerous to mention, of the successful use of the various K compounds given to mothers before labor or to infants directly after birth. The various compounds differed in their effectiveness, depending also upon the method of administration.

VITAMIN E (TOCOPHEROL)

Deficiency of vitamin E among certain animals results in various neuromuscular disorders. During the past several years reports from this country and abroad have suggested that vitamin E might be of benefit to patients with muscular dystrophy and other neuromuscular disorders. But it should be noted that these statements have not been substantiated in any way by clinical evidence.

It has been known for about twenty years that vitamin E must be included in the diet of the rat to insure successful reproduction. There have been very few clinical studies dealing with this role of the vitamin in human physiology, and

they have not led to definite conclusions.

There seems to be agreement that the vitamin is of no value in the treatment of sterility. There are indications, however, that it may be of value in the treatment of habitual abortion, but further clinical studies are needed to clear up this picture.

Part II. The Water Soluble Vitamins

ASCORBIC ACID

There is enough experimental and clinical evidence to show that suboptimal amounts of this factor result in the development of pathological and clinical phenomena which are described as scurvy.

It is advisable in planning diets for infants who do not receive breast milk and for small children to make special provision for a source of vitamin C, since fresh cow's milk contains only about one-fourth as much ascorbic acid as mother's milk, and the vitamin in most foods is very easily destroyed by oxidation.

Up to the present time definite claims for the therapeutic value of ascorbic acid can be made only in relation to scurvy. Dental caries, pyorrhea, certain gum infections, anemia, malnutrition, and infection alone are not in themselves sufficient indications of vitamin C deficiency, but they may be concomitant signs of the deficiency according to clinical evidence.

There is insufficient convincing evidence at present to recognize any anti-infective effect of ascorbic acid, since secondary infections are characteristic of disturbances of nutrition, especially in all vitamin deficiencies.

The use of ascorbic acid in the treatment of tuberculosis has been investigated by Erwin *et al* at the Liverpool Sanatorium. They came to the conclusion that the vitamin is of no value in the treatment of pulmonary tuberculosis and its complications. Saturation with ascorbic acid neither contributed to the recovery nor retarded retrogression in most cases.

THE B-COMPLEX

The term Vitamin B-Complex is applied to a group of substances which have been shown to be constituents of what was formerly called vitamin B. If a diet is deficient, such as to produce the symptoms of one deficiency, it is not unusual to find symptoms of another deficiency, or if the diet is not improved along with a specific treatment, symptoms of another deficiency may develop while the patient is under such treatment. This is especially true of the members of the B-complex. In cases of definitely diagnosed vitamin deficiencies, large doses of that particular vitamin are needed at once, but as a supplement, combinations of vitamins should be given. Numerous such preparations are available, and while many of them—probably too many of them—are consumed needlessly, there are certain justifications for their use.

THIAMINE

This factor is recognized as being of fundamental importance in connection with the disease beriberi. It is of value in correcting and preventing this disease.

Where there is no obvious cause for anorexia, other than a possible dietary one, it can be said that thiamine may be of therapeutic value when the general condition to be treated is due to a deficiency of that vitamin. It should be noted that there are many causes of anorexia, some due to infections and others due to organic disorders.

Statements that thiamine is important in promoting growth are misleading, since it should be noted that this vitamin is no more important in contributing to normal growth than any of the other vitamins, essential minerals, or amino acids.

It has not been definitely established that thiamine deficiency is the sole cause of conditions prescribed as alcoholic

neuritis, neuritis of pregnancy, or neuritis of pellagra. There is some definite evidence that this vitamin is of value in the treatment of these conditions.

The requirement of thiamine is greatly increased in cases of augmented metabolism, such as occurs in febrile conditions, hyperthyroidism, and strenuous muscular activity.

Clinical evidence presented thus far does not indicate that thiamine shows a beneficial action when given routinely to diabetic patients.

RIBOFLAVIN

This factor is now recognized as a specific in the treatment of certain characteristic lesions of the tongue, lips, and the face. Typical glossitis is often observed before the other signs of riboflavin deficiency are present. In contrast to the glossitis of pellagra, the tongue is clean and the color is purplish red, instead of being scarlet as in nicotinic acid deficiency. During the later stages of the disease, the lips become reddened and shiny with maceration and fissuring at the angles of the mouth (cheilosis). These symptoms are promptly relieved by adequate amounts of riboflavin.

Itching and burning of the eyes, accompanied by mild photophobia, are some of the ocular manifestations due to riboflavin deficiency. The anatomical changes may vary from a superficial invasion of the cornea by capillaries to an extensive vascular proliferation. These clinical symptoms, when due to ariboflavinosis, are promptly relieved by the administration of the vitamin.

The use of riboflavin is also recommended for the alleviation of symptoms of riboflavin deficiency which are frequently encountered in cases of the deficiency of the other members of the B-complex.

Riboflavin is not any more important in contributing to normal growth than any one of the other vitamins.

NICOTINIC ACID

It is conservative to think of pellagra as a B group avitaminosis in which the lack of nicotinic acid is predominant, but in which the other vitamins are depleted to a level of physiologic inadequacy.

Nicotinic acid or its amide is recognized as a specific only in the treatment of pellagra. Administration of this substance brings about the disappearance of alimentary, dermal, and other lesions, with a return to normal of porphyrin pigments of the urine so characteristic of the disease. Mental symptoms will also be improved by the administration of the acid or its amide when these are the result of an inadequate intake of this dietary factor. Cheilosis and polyneuritis, so frequently observed in pellagra patients, are not cured by nicotinic acid. In such cases it is necessary to insure the presence of riboflavin and thiamine in the diet.

PYRIDOXINE

The effects of pyridoxine deficiency were first reported by Spies in 1939. A number of undernourished persons with indications of pellagra, beriberi, and ariboflavinosis received nicotinic acid, thiamine, and riboflavin, and although greatly benefited still complained of extreme nervousness, insomnia, and weakness. After these patients were given injections of pyridoxine in saline, all experienced dramatic relief of the symptoms within a day or so.

The relation of pyridoxine to hemopoiesis is suggested by the fact that microcytic hypochromic anemia can be cured by the addition of this factor to the diet.

It should be pointed out that these are only preliminary reports, and as yet sufficient satisfactory clinical evidence has not been presented establishing its therapeutic value for man.

PANTOTHENIC ACID

Definite clinical syndromes for the deficiency of this factor have not as yet been established, and its role in human nutrition is not definitely known.

Spies and his co-workers reported observations made concerning the blood level of pantothenic acid in normal and B-complex deficient persons. The difference in the concentration of this factor found in these two groups suggest that this vitamin plays a role in human nutrition.

In animals, experimental deficiency produces pathological changes in the central nervous system, and, according to Sebrell *et al,* apparently has important effects on the endocrine glands. (Adreno-cortical necrosis).

CHOLINE

The existence of choline as a component of the phospholipid, lecithin, has been known for many years. It was not revealed until 1932, when Best and his associates showed that choline was the active part of the lecithin molecule which prevented the development of certain types of fatty livers in depancreatized dogs. Choline, in all probability, is essential to human nutrition, but this aspect of the problem still remains practically unexplored.

BIOTIN

The anti-egg white injury factor has recently been isolated in pure form by DuVigneaud *et al,* and work is in progress to determine its structure.

Nutritional studies have been carried out on animals only, and its definite role in animal and human nutrition remains to be established. Avidin—the egg white injury factor—has also been isolated recently and is available in pure form.

FOLIC ACID

This factor has very recently been isolated and reported by R. J. Williams and his co-workers. It was originally obtained from green leaves (spinach) and has since been found to be present in all animal tissues. Its importance in human and animal nutrition has not as yet been investigated. It is a growth stimulant for yeast.

P-AMINOBENZOIC ACID

In view of the fact that p-aminobenzoic acid, a member of the B-complex, has been reported to have chromotrichial activity for certain species and is known to play a role in enzymatic pigmentation processes, preliminary clinical investigations have been undertaken during the last year.

Favorable results have been reported in all cases as far as a darkening of the hair is concerned. It remains to be proved, however, that p-aminobenzoic acid is the sole factor concerned with a change in the color of the hair.

THE COMMENTATOR

(Continued from page 10)

a wonderful help to a man in private practice was the way the dean had expressed it. In contrast, came the words of Bob Wheeler, *These things are set up to give the big boys a chance to strut their stuff.* Who was right, or was there some truth in what each had said?

Joe's mind began to go over the things the essayists had so convincingly told him. Were they new ideas, or just the same old procedures with a few personal trimmings added by the big names? Did they really help him make a better restoration for his patient? Did they really show him how to get more material gain from the exhausting hours he put in at the chair?

From this point of view the suspicion began to filter through his mind that the last four days had not paid sufficient dividends for the time he had spent. "No, I'd better not think of it that way," thought Joe as he turned up his collar and buttoned his coat. But in the back of his mind he wondered if his greatest benefits from the meeting had not come out of the new instruments and helpful devices he had seen in the exhibition hall, created by men who have the common sense to realize what problems confront the Joe Doakses in their attempt to make a living.—*Frederick W. Nannestad.*

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(Continued from page 9)

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War Conditions and Tuberculosis: War conditions and the lengthened hours of work in defense industries have reversed the downward trend of tuberculosis, the New York *Times* stated, November 29, in commenting on a survey in the United States and abroad made by Godias J. Drolet, assistant director and statistician of the New York Tuberculosis and Health Association. The survey shows that already a decided increase in tuberculosis mortality is taking place in Europe. Although in the United States generally there has been no sharp change in the rate of this disease, danger signals are appearing, it was stated. In forty-six large American cities surveyed, nineteen showed a rise in tuberculosis mortality during the period from January 1 to November 15. For the entire nation the death rate was 45.9 per hundred thousand of population against 47.1 the year before. In the large cities, however, the death rate was 26 per cent above that of the nation at large. San Antonio had the highest rate, 144 per hundred thousand of population, while St. Paul, with only twenty-eight deaths, had the lowest. The rate in the five cities with more than one million population was for Philadelphia 65, Chicago 61, New York 54, Detroit 51 and Los Angeles 50. Mr. Dorlet, who made a tuberculosis survey for the Rockefeller Foundation during the World War, pointed out that with increased activity and overtime work it is urgent that there be a corresponding increase in our vigilance against tuberculosis.—Medical News. *J.A.M.A.* 118:61 (January 3) 1942.

Rose Hips as a Source of Vitamins: In a letter to the *J.A.M.A.* a correspondent in England reports that plans have been made to harvest the vitamin wealth in the hips of the wild rose, which are particularly rich in vitamin C; twenty times richer than oranges. The hips will be collected by boy scouts, girl scouts and women's institutes and made into a syrup. Half an ounce of the syrup eaten daily with bread would provide a useful supplement to the vitamins obtained in the normal diet. It is interesting that rose hips are a traditional food of European peasants.—*J.A.M.A.* 117:2184 (December 20) 1941.

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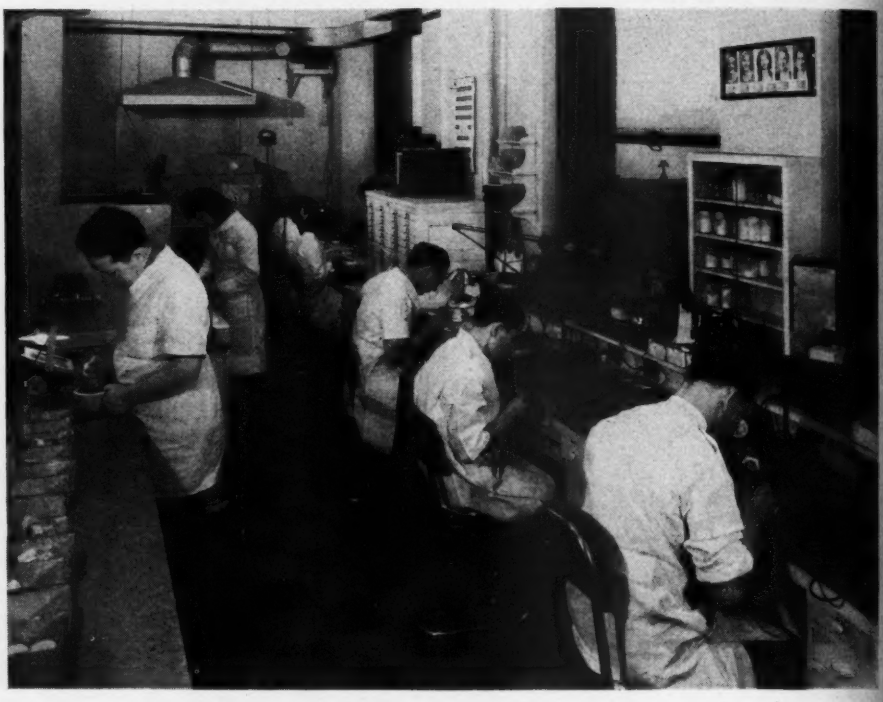

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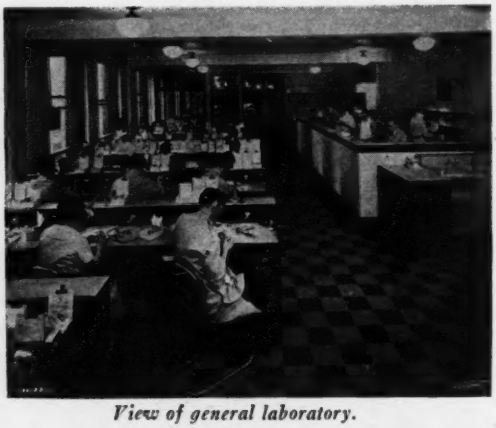

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